

Appl. No. : 10/068,465
Filed : February 6, 2002

REMARKS

In the Office Action mailed June 17, 2003, the Examiner rejected Claims 1-3 and 5-32 and objected to Claim 4 as being dependent upon a rejected base claim. In the present Amendment and Response to Office Action, Applicants have rewritten Claim 4 in independent form and have amended Claims 1, 14, 19, 25 and 30. Applicants respectfully request entry of the amendments and full consideration of the remarks contained herein.

Allowable Subject Matter

Applicants would like to thank the Examiner for indicating that Claim 4 would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. In response, Applicants have rewritten Claim 4 in independent form, including all limitations of base Claim 1 and intervening Claim 2. Accordingly, Applicants respectfully submit that Claim 4 is in condition for allowance.

Amendments to the Claims

Applicants have amended the claims to clarify further the subject matter that Applicants regard as the invention. For example, Applicants have amended independent Claims 1 and 19 to recite that "the magneto-resistive memory cell is electrically connected to a sense line conductor for sensing a resistance of the magneto-resistive memory cell and a write line conductor for changing the magnetization orientation of the free magnetic layer, wherein the sense line conductor is oriented perpendicular to the write line conductor and wherein the magneto-resistive memory cell is at an intersection of the sense line conductor and the write line conductor." Similarly, independent Claim 14 has been amended to recite that "the magneto-resistive memory cell is electrically connected to a sense line conductor for sensing a resistance of the magneto-resistive memory cell and a write line conductor for switching the magnetization orientation of the free magnetic layer, wherein the sense line conductor is oriented perpendicular to the write line conductor and wherein the magneto-resistive memory cell is at an intersection of the sense line conductor and the write line conductor." In addition, Claim 25 has been amended to recite "forming a conductive sense line in electrical contact with the magneto-resistive memory cell; and forming a conductive write line in electrical contact with the magneto-resistive memory cell, wherein the magneto-resistive memory cell is formed at an intersection of the conductive sense

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line and the conductive write line and wherein the sense line conductor is formed perpendicular to the write line conductor.” Support for these amendments can be found in the Application as originally filed. *See, e.g.*, the Application, pp. 10-11.

In addition, as noted above, Applicants have rewritten Claim 4 in independent form, including all the limitations of the base Claim 1 and intervening Claim 2. Support for this amendment can be found in, *e.g.*, Claims 1 and 10-12 and in the Application, pp. 3-4 and 6-7, as originally filed.

Claim 25 has also been amended to recite “a conductor,” rather than “copper” to provide a proper antecedent basis for “conductor” in Claim 29. Support for these amendments can also be found in the Application and claims as originally filed. *See, e.g.*, the Application, p. 10 and Claims 1, 17-19, 30 and 35.

Also, Claim 30 has been amended to recite that “a magnetic material used in forming the first fixed magnetic layer is different from a magnetic material used in forming the second fixed magnetic layer.” Support for this amendment can also be found in the Application and claims as originally filed. *See, e.g.*, the Application, p. 8 and Claim 4.

Consequently, Applicants respectfully submit that the amendments add no new matter and are fully supported by the Application as originally filed.

Rejections Under 35 U.S.C. § 112

The Examiner has rejected Claim 29 under 35 U.S.C. § 112, second paragraph, for reciting “the conductor” because there “is insufficient antecedent basis for this limitation in the claim.” In response, as noted above, Applicants have amended independent Claim 25, from which Claim 29 depends, to recite “a conductor.” As such, Applicants respectfully submit that the recitation of “a conductor” in Claim 25 provides sufficient antecedent basis for “the conductor” in Claim 29.

Rejections Under 35 U.S.C. § 102

The Examiner has rejected Claims 1, 2, 5, 6, 10-12, 14, 17-20 and 23-32 under 35 U.S.C. § 102(b) as being anticipated by Heim et al. (U.S. Patent No. 5,465,185).

Applicants respectfully submit that the pending claims, as amended herewith, are patentably distinct.

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Applicants note initially that independent Claims 1, 14, 19 and 25 have been amended for greater clarity and each now recites a “write line conductor” and relationships among the memory cell, the “sense line conductor” and the “write line conductor.” In particular, Claims 1 and 19 recite that “the magneto-resistive memory cell is electrically connected to a sense line conductor for sensing a resistance of the magneto-resistive memory cell and a write line conductor for changing the magnetization orientation of the free magnetic layer, wherein the sense line conductor is oriented perpendicular to the write line conductor and wherein the magneto-resistive memory cell is at an intersection of the sense line conductor and the write line conductor” and Claim 14 recites that “the magneto-resistive memory cell is electrically connected to a sense line conductor for sensing a resistance of the magneto-resistive memory cell and a write line conductor for switching the magnetization orientation of the free magnetic layer, wherein the sense line conductor is oriented perpendicular to the write line conductor and wherein the magneto-resistive memory cell is at an intersection of the sense line conductor and the write line conductor.” In addition, Claim 25 has been amended to recite “forming a conductive sense line in electrical contact with the magneto-resistive memory cell; and forming a conductive write line in electrical contact with the magneto-resistive memory cell, wherein the magneto-resistive memory cell is formed at an intersection of the conductive sense line and the conductive write line and wherein the sense line conductor is formed perpendicular to the write line conductor.”

In contrast, Heim et al. teaches a magneto-resistive *sensor* with a “sensing means 84” (Col. 5, lines 36-48 and Figure 5) connected to the sensor, but does not disclose a “write line conductor.” As such, Applicants respectfully submit that Heim et al. does not discuss and, so, does not teach a “write line conductor” as recited by independent Claims 1, 14, 19 and 25. Consequently, Applicants respectfully submit that Heim et al. does not teach every limitation of Claims 1, 14, 19 and 25 and, so, does not anticipate those claims.

Regarding Claim 30, Applicants note that this claim now recites that “a magnetic material used in forming the first fixed magnetic layer is different from a magnetic material used in forming the second fixed magnetic layer.” As noted by the Examiner in finding Claim 4 to be allowable subject matter, Applicants submit that the art of record does not teach different magnetic materials for the first and second fixed magnetic layers, as recited by Claim 30.

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Consequently, Applicants respectfully submit that Claim 30 is not anticipated by the art of record.

Rejection Under 35 U.S.C. § 103

The Examiner has rejected Claims 3, 7-9, 13, 15-16 and 21-22 as being obvious over Heim et al. alone and in view of various secondary references. In each case, the Examiner has stated that Heim et al. discloses the features of the base claims from which Claims 3, 7-9, 13, 15-16 and 21-22 depend, except for various deficiencies, which the Examiner has stated were satisfied by particular secondary references.

Applicants respectfully traverse the rejections.

As discussed above, Applicants note that Heim et al. does not teach a “write line conductor,” a “sense line conductor ... oriented perpendicular to the write line conductor” and “the magneto-resistive memory cell ... at an intersection of the sense line conductor and the write line conductor,” as recited by the base Claims 1, 14 and 19, from which Claims 3, 7-9, 13 and 15-16, and 21-22 depend, respectively. Moreover, Applicants submit that the art of record provides no suggestion or motivation to provide a “sense line conductor” and a “write line conductor” and to arrange the magneto-resistive memory cell as recited by Claims 1, 14 and 19. As such, Applicants submit that Heim et al. alone or in combination with the various secondary references does not teach every limitation of Claims 3, 7-9, 13, 15-16 and 21-22. Consequently, Applicants respectfully submit that Claims 3, 7-9, 13, 15-16 and 21-22 are not obviousness in view of the art of record.

Accordingly, Applicants submit that the pending claims are allowable over the art of record. Applicants have not addressed the further anticipation and obviousness rejections of every dependent claim as being moot in view of the amendments and remarks herein. However, Applicants expressly do not acquiesce in the Examiner’s findings not addressed herein. Indeed, Applicants submit that the dependent claims recite further novel and non-obvious features of particular utility.

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CONCLUSIONS

In view of the foregoing remarks, Applicants submit that the application is in condition for allowance and respectfully request the same. If some issue remains that the Examiner feels may be addressed by Examiner's amendment, the Examiner is cordially invited to call the undersigned for authorization.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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